## REMARKS

Claims 1-28 are all the claims pending in the application. Claims 1-28 have been rejected. Claims 1, 3, 7, 11-13, 15, 18, 19 and 21-28 have been amended. Claims 2, 4, 8, 14, 16 and 20 have been cancelled.

### *Claim Rejections - 35 USC 102*

Claims 1-28 are rejected under 35 U.S.C. § 102(b) as being anticipated by Hansen et al (5,953,683). This rejection is traversed for at least the following reasons.

The independent claims 1, 7, 11, -13, 19 and 23-28 have been amended to overcome the patent to Hansen by incorporating the subject matter of claim 4.

In Hansen, as pointed out by the Examiner, three angles, i.e. roll, elevation, and azimuth are respectively defined as $\alpha$ (rotation around x-axis), $\beta$ (rotation around y-axis), and $\theta$ (rotation around z-axis). The Examiner asserts that Hansen discloses the same technical idea as the present invention in that the roll, the elevation and the azimuth are converted into rotational angle. However, Applicant respectfully submits that Hansen fails to disclose the subject matter of claim 4, that is, calculating the rotation angle based on a three-rotation coordinate expression.

In the present invention, the rotation angle is calculated using the coordinate expression for their rotations three times, or three-rotation coordinate expression, as disclosed at page 24, line 24 to page 25 line 3 of the present specification. As disclosed, the order of matrices in formula (8) is a very important factor in determining the azimuth. Without the directional measuring method and device in the present invention, just converting into a rotational angle would not lead to an accurate azimuth value.

The reason why the present invention can obtain a more accurate azimuth than the technique and device of Hansen is described at page 25 line 17 to page 26 line 11 of the present application. Details of calculation are described at page 26 line 1 to page 27 line 6 in the specification.

Therefore, in the present invention, as disclosed at page 46 lines 7 to 11, by using the simple computational equation based on the coordinate system for rotations three times, it is

possible to simply measure a direction with high precision. This advantage, which is unique to the present invention, cannot be obtained by the cited reference, Hansen.

Finally, certain amendments have been made to the claims in order to provide better language for defining the invention in accordance with U.S. practice.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.
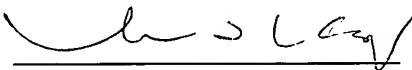
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